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2003
AMENDMENTS
to the
Program of Studies: Career and Technology Studies
Junior and Senior High Schools

1. **Replace** the Career and Technology Studies title page, following the Career and Technology Studies divider.
2. **Replace** Career and Technology Studies, page 4, with **revised** Career and Technology Studies, page 4.
3. **Replace** Career Transitions, pages 11, 13, 17, 18 and 21, with **revised** Career Transitions, pages 11, 13, 17, 18 and 21.
4. **Replace** Communication Technology, pages 11 and 13, with **revised** Communication Technology, pages 11 and 13.
5. **Replace** Community Health, page 17, with **revised** Community Health, page 17.
6. **Replace** Cosmetology Studies, page 12, with **revised** Cosmetology Studies, page 12.
7. **Replace** Electro-Technologies, pages 11 and 23, with **revised** Electro-Technologies, pages 11 and 23.
8. **Replace** Fabrication Studies, pages 11, 17, 22 and 27 to 34, with **revised** Fabrication Studies, pages 11, 17, 22 and 27 to 37.
9. **Replace** Financial Management, pages 9, 11 and 21, with **revised** Financial Management, pages 9, 11 and 21 to 23.
10. **Replace** Information Processing, pages 11, 13 and 17 with **revised** Information Processing, pages 11, 13 and 17.

CAREER AND TECHNOLOGY STUDIES

CONTENTS

Career and Technology Studies [applies to all 22 strands]

Agriculture
Career Transitions
Communication Technology
Community Health
Construction Technologies
Cosmetology Studies
Design Studies
Electro-Technologies
Energy and Mines
Enterprise and Innovation
Fabrication Studies
Fashion Studies
Financial Management
Foods
Forestry
Information Processing
Legal Studies
Logistics
Management and Marketing
Mechanics
Tourism Studies
Wildlife

PROGRAM OUTCOMES

The program outcomes describe the basic competencies integrated throughout the CTS program.

Within an applied context relevant to personal goals, aptitudes and abilities; *the student in CTS will:*

- demonstrate the basic knowledge, skills and attitudes necessary for achievement and fulfillment in personal life
- develop an action plan that relates personal interests, abilities and aptitudes to career opportunities and requirements
- use technology effectively to link and apply appropriate tools, management and processes to produce a desired outcome
- develop basic competencies (employability skills), by:
 - selecting relevant, goal-related activities, ranking them in order of importance, allocating necessary time, and preparing and following schedules (managing learning)
 - linking theory and practice, using resources, tools, technology and processes responsibly and efficiently (managing resources)
 - applying effective and innovative decision-making and problem-solving strategies in the design, production, marketing and consumption of goods and services (problem solving and innovation)
 - demonstrating appropriate written and verbal skills, such as composition, summarization and presentation (communicating effectively)
 - participating as a team member by working cooperatively with others and contributing to the group with ideas, suggestions and effort (working with others)

- maintaining high standards of ethics, diligence, attendance and punctuality, following safe procedures consistently, and recognizing and eliminating potential hazards (demonstrating responsibility).

PROGRAM ORGANIZATION

CURRICULUM STRUCTURE

Career and Technology Studies is organized into **strands** and **courses**.

Strands in CTS define competencies that help students:

- build daily living skills
- investigate career options
- use technology (managing, processes, tools) effectively and efficiently
- prepare for entry into the workplace and/or related post-secondary programs.

In general, strands relate to selected industry sectors offering positive occupational opportunities for students. Some occupational opportunities require further education after high school, and some allow direct entry into the workplace. Industry sectors encompass goods-producing industries, such as agriculture, manufacturing and construction; and service-producing industries, such as business, health, finance and insurance.

Courses are the building blocks for each strand. They define what a student is expected to know and be able to do (exit-level *competencies*). Courses also specify prerequisites. Recommendations for course parameters, such as instructional qualifications, facilities and equipment can be found in the guides to implementation.

The competencies a student must demonstrate to achieve success in a course are defined through *general outcomes*. Senior high school students who can demonstrate the general outcomes defined for a CTS course; i.e., who have the designated competencies, will qualify for 1 credit toward their high school diploma.

Specific outcomes provide a more detailed framework for instruction. Within the context of the general outcomes, the specific outcomes further define the knowledge, skills and attitudes the student should acquire.

The following chart shows the 22 strands that comprise the CTS program and the number of 1-credit courses available in each strand.

Strand	No. of Courses
1. Agriculture	33
2. Career Transitions	32
3. Communication Technology	35
4. Community Health	31
5. Construction Technologies	46
6. Cosmetology Studies	58
7. Design Studies	31
8. Electro-Technologies	37
9. Energy and Mines	26
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11. Fabrication Studies	44
12. Fashion Studies	29
13. Financial Management	16
14. Foods	37
15. Forestry	21
16. Information Processing	53
17. Legal Studies	13
18. Logistics	12
19. Management and Marketing	20
20. Mechanics	54
21. Tourism Studies	24
22. Wildlife	17

LEVELS OF ACHIEVEMENT

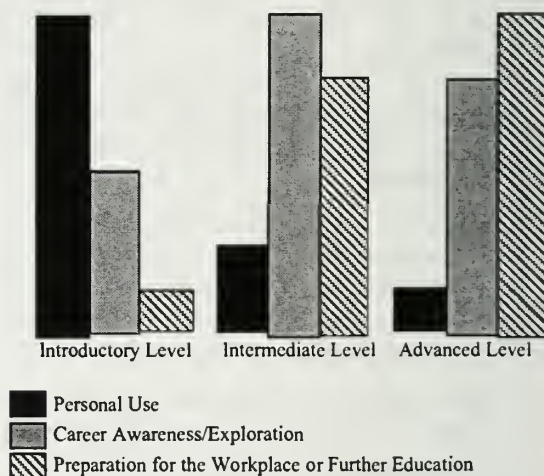
Courses are organized into three levels of achievement: **introductory**, **intermediate** and **advanced**. As students progress through the levels, they will be expected to meet higher standards and demonstrate an increased degree of competence, in both the program outcomes and the general outcomes defined for individual courses.

Introductory level courses help students build daily living skills and form the basis for further learning. Introductory courses are for students who have no previous experience in the strand.

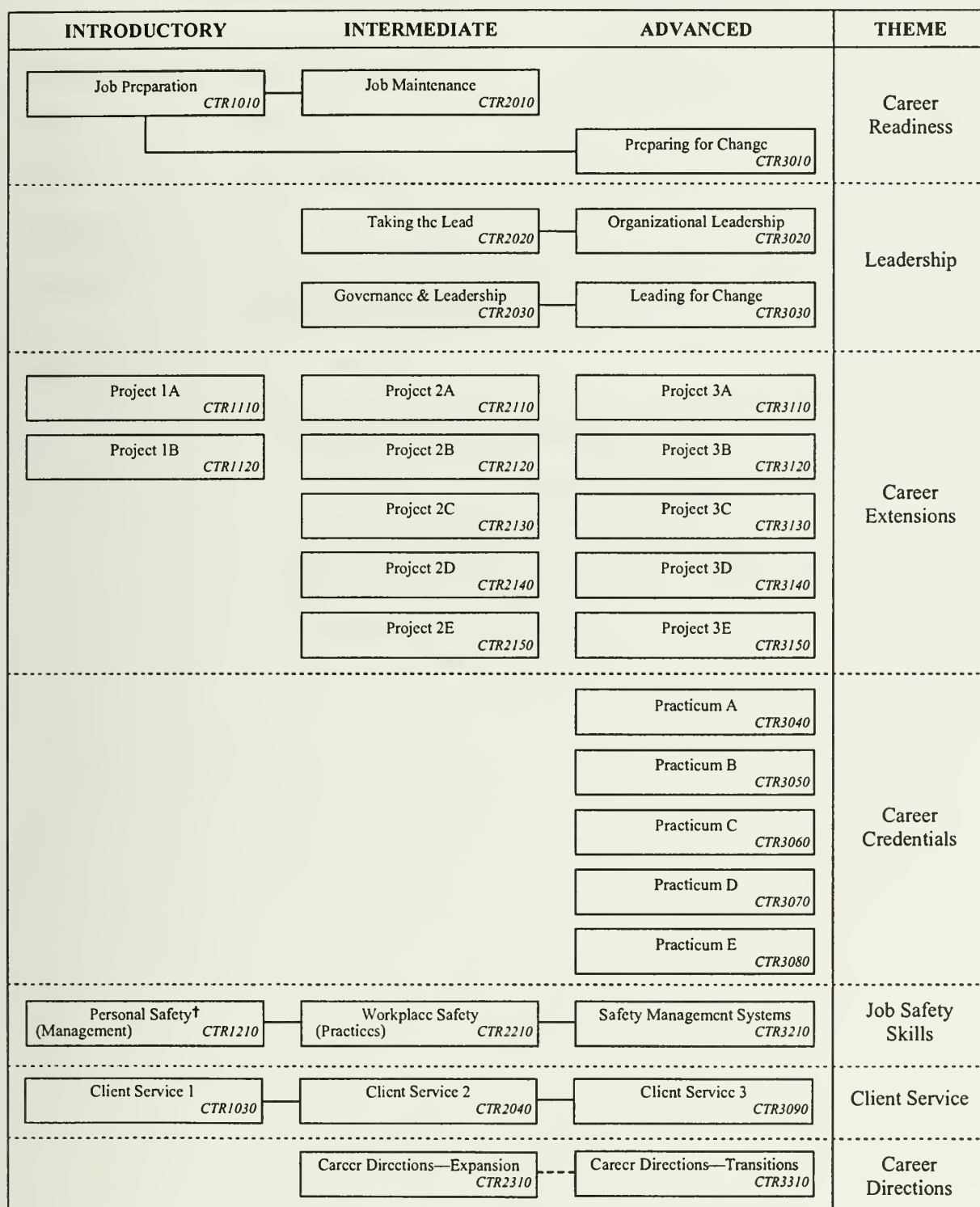
Intermediate level courses build on the competencies developed at the introductory level. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Advanced level courses refine expertise and help prepare students for entry into the workplace or a related post-secondary program.

The graph below illustrates the relative emphasis on the aspects of career planning at each of the levels.



SCOPE AND SEQUENCE



—— Prerequisite

----- Recommended Sequence

† Course is also offered in Community Health.

GENERAL OUTCOMES: INTRODUCTORY LEVEL

COURSE CTR1010: JOB PREPARATION

Level: Introductory

Theme: Career Readiness

Prerequisite: None

Description: Students develop successful employment search skills and a personal employment search portfolio.

General Outcomes: *The student will:*

- identify and develop knowledge, skills and attitudes appropriate for conducting successful employment searches
- communicate in the language in which business is conducted
- prepare a personal employment search portfolio
- use technologies, tools and information systems appropriately for job preparation
- demonstrate basic competencies.

COURSE CTR1030: CLIENT SERVICE 1

Level: Introductory

Theme: Client Service

Prerequisite: None

Description: Students are introduced to the principles and practices of client service. The learning acquired through other CTS courses is extended and enhanced, and opportunities are provided for students to apply and to integrate, in real-life contexts, the knowledge, skills and attitudes developed through other courses.

The context of instruction for this course is determined by the other CTS strands to which it is linked.

General Outcomes: *The student will:*

- define “client service” and explain the relationship between “client” and “service”
- identify and describe the scope of client services available to clients
- demonstrate and record basic client services, including:
 - applications of competencies learned in other courses
 - communication skills
 - safety practices
- demonstrate basic competencies.

COURSE CTR1110: PROJECT 1A**COURSE CTR1120: PROJECT 1B**

Level: Introductory

Theme: Career Extensions

Prerequisite: None

Description: Students, through projects, extend and enhance competencies developed in the Career Transitions strand or other Career and Technology Studies strands to contexts that are personally relevant.

General Outcomes: *The student will:*

- propose, manage and assess a project
- meet goals as defined within the project plan
- demonstrate basic competencies.

GENERAL OUTCOMES: INTERMEDIATE LEVEL

COURSE CTR2010: JOB MAINTENANCE

Level: Intermediate

Theme: Career Readiness

Prerequisite: CTR1010 Job Preparation

Description: Students acquire knowledge about workplace requirements, rights and responsibilities and relate this knowledge to personal career/employment expectations.

General Outcomes: *The student will:*

- identify and develop knowledge, skills and attitudes appropriate to acquiring and maintaining employment
- identify and describe employment support agencies, employment centres and employment legislation
- demonstrate basic competencies.

COURSE CTR2020: TAKING THE LEAD

Level: Intermediate

Theme: Leadership

Prerequisite: None

Description: Students compare basic theories and styles of leadership, and demonstrate leadership in a school, workplace or community context.

General Outcomes: *The student will:*

- compare theories and styles of leadership
- demonstrate the ability to lead others
- demonstrate basic competencies.

COURSE CTR2030: GOVERNANCE & LEADERSHIP

Level: Intermediate

Theme: Leadership

Prerequisite: None

Description: Students are introduced to governance, its place within the administrative structure of a school or community, including the roles, responsibilities, practices and procedures for participating in governance and leadership.

General Outcomes: *The student will:*

- describe and explain the purpose of a governance structure
- participate in leadership activities within a school, volunteer agency or a community governance structure
- demonstrate leadership in a governance role
- demonstrate basic competencies.

COURSE CTR2310: CAREER DIRECTIONS—EXPANSION

Level: Intermediate

Theme: Career Directions

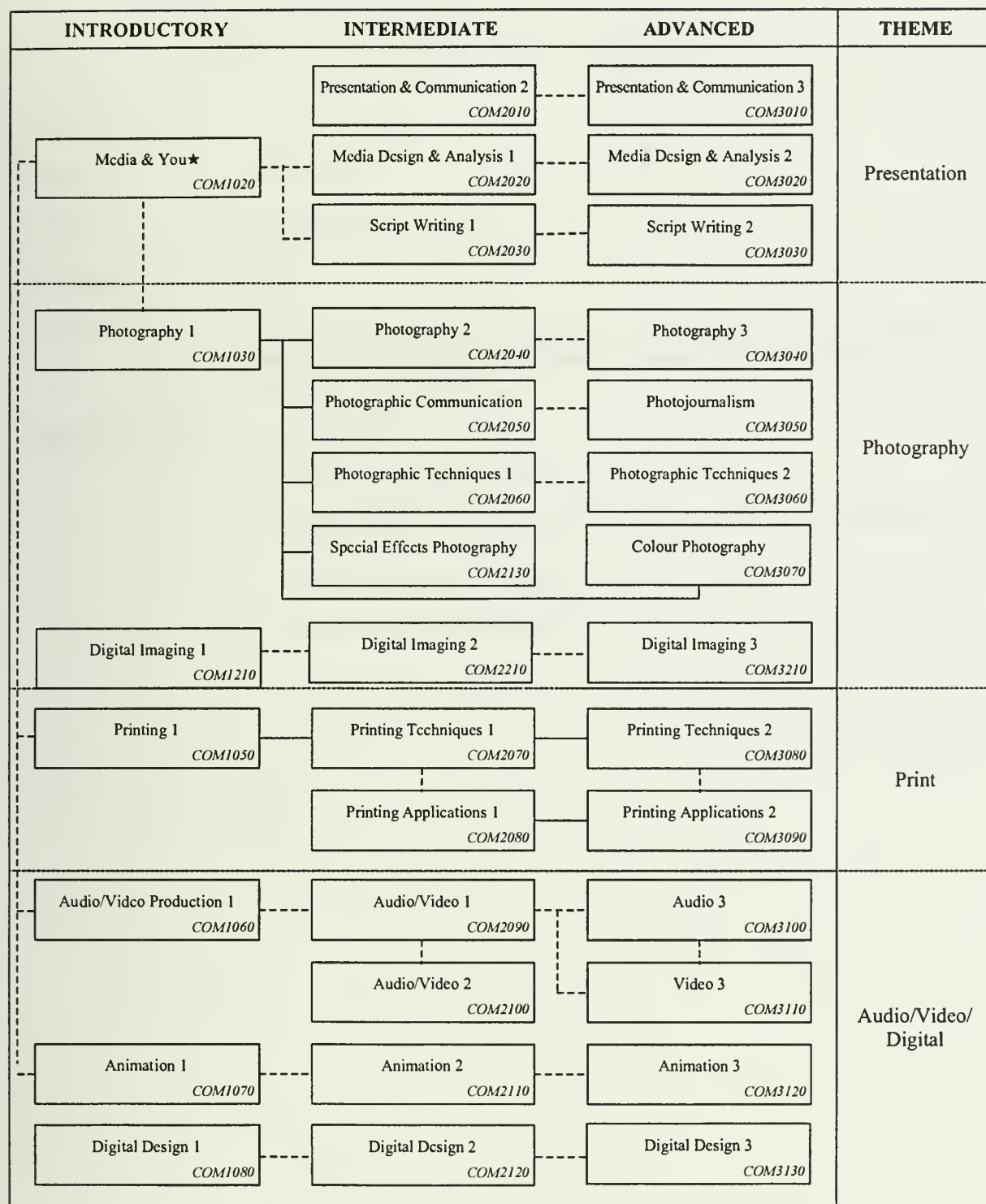
Prerequisite: None

Description: Students build on work done in Career and Life Management (CALM) to update their learning/career plan, to enhance their career tool kit, and to update their action plan for strengthening essential competencies and learning capacity.

General Outcomes: *The student will:*

- refine and present the career portfolio, showing evidence of strengths and competencies, including accomplishments over the past year
- describe the career paths of two individuals working in different occupations in terms of their career planning and transition experiences
- update learning/career planner and expand personal career network/resource list
- prepare two alternative personal career transition scenarios—high school plus five years—including:
 - links to personal competencies, interests and goals
 - research of selected occupations/industries and learning requirements
 - research of present and lifelong learning opportunities
- refine and/or expand action plans to enhance essential competencies and to build learning capacity.

SCOPE AND SEQUENCE



—— Prerequisite

----- Recommended sequence

★ Course provides a strong foundation for further learning in this strand.

Note: Presentation & Communication 1 has been withdrawn effective September 2003.

GENERAL OUTCOMES: INTRODUCTORY LEVEL

COURSE COM1020: MEDIA & YOU

Level: Introductory

Theme: Presentation

Prerequisite: None

Description: Students are provided with a hands-on introduction to the various segments of communication studies: presentation and communication, photography, print, and audio/video production.

General Outcomes: *The student will:*

- identify and describe current media and materials
- use photographic, print and audio/video equipment to communicate ideas and information
- prepare and deliver a presentation
- demonstrate basic competencies.

COURSE COM1030: PHOTOGRAPHY 1

Level: Introductory

Theme: Photography

Prerequisite: None

Description: Students operate a camera to take photographs and produce prints.

General Outcomes: *The student will:*

- use various photographic equipment, materials and processes to demonstrate basic photographic skills
- describe and/or use various processing methods; e.g., black and white, colour, digital
- describe the role of photography in society
- demonstrate basic competencies.

COURSE COM1050: PRINTING 1

Level: Introductory

Theme: Print

Prerequisite: None

Description: Students are introduced to basic layout/design techniques and to various print reproduction processes; e.g., offset, screen, electrostatic.

General Outcomes: *The student will:*

- identify the fundamental characteristics and applications of type, paper and ink
- produce a design/layout
- apply printing techniques in the production of print/graphic projects
- demonstrate basic competencies.

COURSE CMH1080: PERSPECTIVES ON HEALTH

Level: Introductory

Theme: Health Sciences

Prerequisite: None

Description: Students identify the determinants of good health, and examine how these determinants affect personal well-being. Students also discuss the shared roles, rights and responsibilities of health services and the changing trends in health.

Note: This course includes concepts that may be particularly sensitive to students, parents or community members.

General Outcomes: *The student will:*

- identify determinants of good health and describe how they affect all dimensions of well-being
- describe the physical make-up of the human body
- describe how health involves shared roles, rights and responsibilities between the individual and society
- describe a current health issue that focuses on the changes in health services
- demonstrate basic competencies.

COURSE CTR1210: PERSONAL SAFETY (MANAGEMENT)

Level: Introductory

Theme: Injury Prevention

Prerequisite: None

Description: Students develop practical safety-related knowledge, skills and attitudes, and obtain training and possible certification in emergency first aid.

General Outcomes: *The student will:*

- identify and describe:
 - health and safety stakeholders
 - legislation relating to health and safety
 - hazards; e.g., office safety
 - careers in safety
- demonstrate basic health and safety practices, including:
 - burn prevention
 - use of personal protective equipment (PPE)
 - back care
- describe and implement a personal health and safety plan
- complete, successfully, a course in emergency first aid (EFA)
- demonstrate basic competencies.

SCOPE AND SEQUENCE

INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME
<div>Personal Images ■ COS1010</div>		<div>Professional Practices ■●◆ COS3010</div>	Images and Practices
<div>Hair Graphics 1 COS1020</div>	<div>Hair Graphics 2 ◆ COS2010</div>	<div>Long Hair Graphics ◆ COS3020</div>	Hair and Scalp Care
<div>Hair & Scalp Care 1 COS1030</div>	<div>Hair & Scalp Care 2 ◆ COS2020</div>	<div>Hair & Scalp Care 3 ◆ COS3030</div>	
<div>Forming & Finishing 1 ◆ COS1040</div>	<div>Forming & Finishing 2 ◆ COS2030</div>	<div>Hair & Scalp Care 4 ◆ (Client Services) COS3040</div>	
	<div>Haircutting 1 ◆ COS2040</div>	<div>Haircutting 2 ◆ COS3050</div>	Haircutting
		<div>Haircutting 3 ◆ (Client Services) COS3060</div>	
	<div>Hair Care & Cutting 1 ◆ (Client Services) COS2050</div>	<div>Hair Care & Cutting 2 ◆ (Client Services) COS3070</div>	
<div>Permanent Waving 1 ◆ (The Physical Process) COS1050</div>	<div>Permanent Waving 2 ◆ (Cold Waving) COS2060</div>	<div>Permanent Waving 5 ◆ (Designer) COS3080</div>	Chemical Services: Permanent Waving
	<div>Permanent Waving 3 ◆ (Heat-assisted) COS2070</div>	<div>Relax/Straighten Hair ◆ COS3090</div>	
	<div>Permanent Waving 4 ◆ (Client Services) COS2080</div>	<div>Wave, Relax & Straighten Hair ◆ (Client Services) COS3100</div>	
	<div>Colouring 1 ◆ COS2090</div>	<div>Colouring 2 (Permanent) ◆ COS3110</div>	Chemical Services: Haircolouring
	<div>Colour Removal 1 ◆ COS2100</div>	<div>Colour Removal 2 ◆ COS3120</div>	
	<div>Colouring & Removal 1 ◆ (Client Services) COS2110</div>	<div>Colouring & Removal 2 ◆ (Client Services) COS3130</div>	
<div>Skin Care 1 (Basic Practices) COS1060</div>	<div>Facials & Makeup 1 ◆ COS2120</div>	<div>Body Therapy ◆ COS3140</div>	Skin Care
	<div>Facials & Makeup 2 ◆ (Client Services) COS2130</div>	<div>Hair Removal ◆ COS3150</div>	
	<div>Skin Care 2 (Client Services) ◆ COS2140</div>	<div>Skin Care 3 (Client Services) ◆ COS3160</div>	

Note: There are extensive prerequisite requirements that are too complex to be depicted in this scope and sequence chart.

- Prerequisite to all introductory courses in this strand.
- Prerequisite to all advanced courses in this strand.
- ◆ Please refer to specific courses for additional prerequisites. Only the immediate prerequisite(s) are listed; prerequisite courses may have further prerequisite requirements.

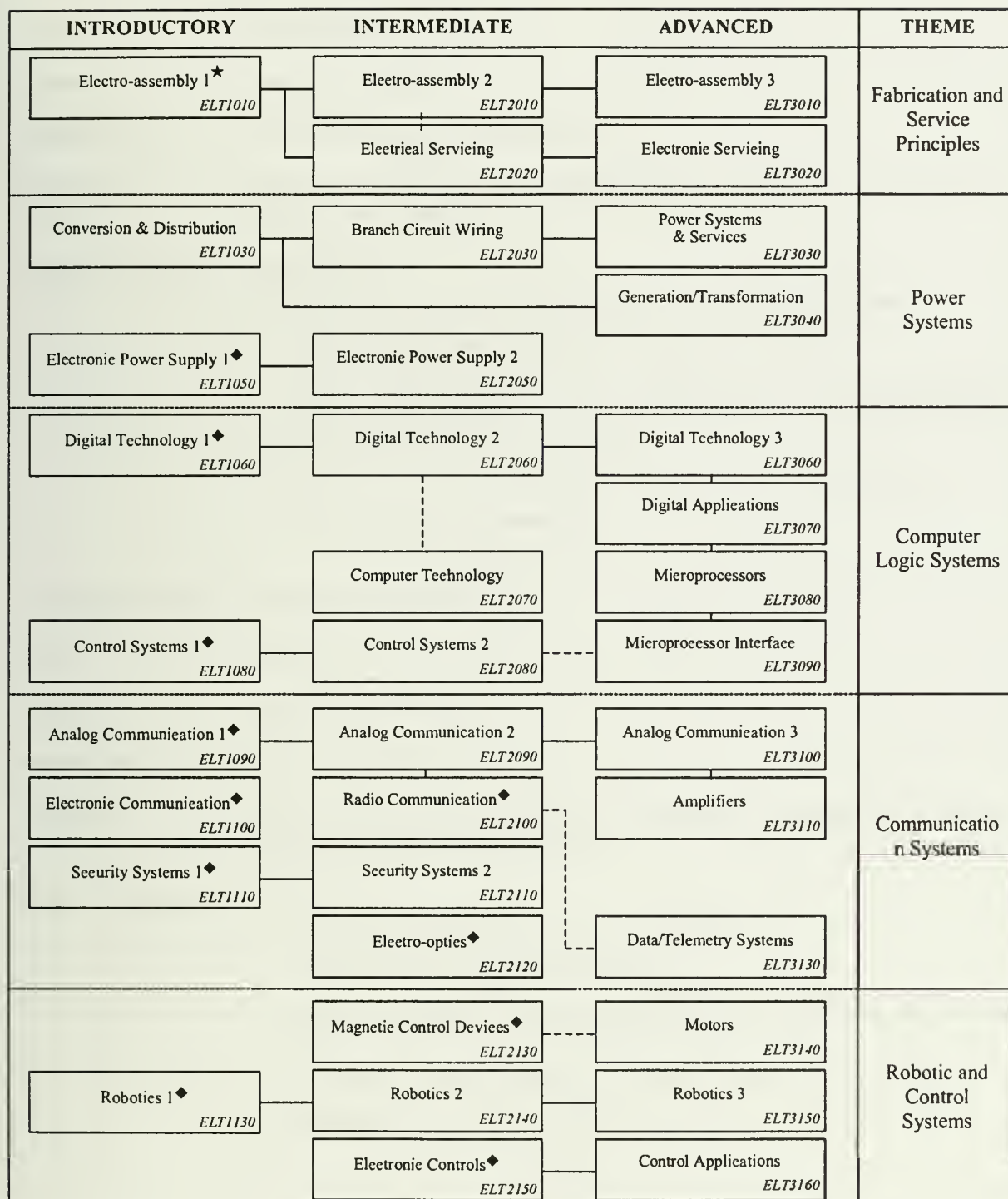
SCOPE AND SEQUENCE (continued)

INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME
		<div>Male Facial Grooming 1 ♦ COS3170</div> <div>Male Facial Grooming 2 ♦ (Client Services) COS3180</div>	Male Facial Grooming
<div>Manicuring 1 ♦ COS1070</div>	<div>Manicuring 2 ♦ COS2150</div> <div>Nail Art ♦ COS2160</div> <div>Manicuring 3 (Client Services) ♦ COS2170</div>	<div>Nail Technology ♦ COS3190</div> <div>Pedicuring ♦ COS3200</div> <div>Nail Care (Client Services) ♦ COS3210</div>	Nail Care
<div>Theatrical Makeup 1 ♦ (Basic Principles) COS1080</div>	<div>Hairpieces & Extensions ♦ COS2180</div> <div>Theatrical Makeup 2 ♦ (Planning the Images) COS2190</div>	<div>Wigs & Toupees ♦ COS3220</div> <div>Hair Goods (Client Services) ♦ COS3230</div> <div>Theatrical Makeup 3 ♦ (Changing Images) COS3240</div> <div>Theatrical Makeup 4 ♦ (Client Services) COS3250</div> <div>Facial & Body Adornment ♦ COS3260</div>	Special Effects/ Services
	<div>Historical Cosmetology ♦ COS2200</div> <div>Sales & Service 1 (Principles & Practices) COS2210</div>	<div>Creative Cosmetology ♦ COS3270</div> <div>Sales & Service 2 ♦ (Effectiveness) COS3280</div> <div>Competition Cosmetology ♦ COS3290</div>	Enterprise and Competition

Note: There are extensive prerequisite requirements that are too complex to be depicted in this scope and sequence chart.

- ♦ Please refer to specific courses for additional prerequisites. Only the immediate prerequisite(s) are listed; prerequisite courses may have further prerequisite requirements.

SCOPE AND SEQUENCE



—— Prerequisite

----- Recommended sequence

★ Course provides a strong foundation for further learning in this strand.

♦ Refer to specific courses for additional prerequisites.

COURSE ELT2100: RADIO COMMUNICATION

Level: Intermediate

Theme: Communication Systems

Prerequisite: ELT2090 Analog Communication 2

Description: Students demonstrate the fundamental concepts of electromagnetic communication systems.

General Outcomes: *The student will:*

- describe the principles of electromagnetic communication systems
- construct and test electromagnetic communication systems
- explain wireless communication technology through project construction, experimentation, circuit analysis and electronic component identification of oscillation amplification and detection
- demonstrate established laboratory procedures and safe work practices
- demonstrate basic competencies.

COURSE ELT2110: SECURITY SYSTEMS 2

Level: Intermediate

Theme: Communication Systems

Prerequisite: ELT1110 Security Systems 1

Description: Students demonstrate the fundamentals of security technology used in homes, businesses and transportation systems.

General Outcomes: *The student will:*

- identify and describe elements of a security system
- identify detection and notification devices
- fabricate and operate a detection and notification alarm system for home or car use
- demonstrate established laboratory procedures and safe work practices
- demonstrate basic competencies.

COURSE ELT2120: ELECTRO-OPTICS

Level: Intermediate

Theme: Communication Systems

Prerequisite: ELT2100 Radio Communication

Description: Students demonstrate basic knowledge of lasers and other light wave communication applications in various electronic systems.

General Outcomes: *The student will:*

- identify common types and classes of lasers
- explain the operation of laser, fibre optic, infrared and hologram light wave technology
- construct an electro-optical project
- demonstrate established laboratory procedures and safe work practices
- demonstrate basic competencies.

COURSE ELT2130: MAGNETIC CONTROL DEVICES

Level: Intermediate

Theme: Robotic and Control Systems

Prerequisite: ELT1010 Electro-assembly 1

Description: Students demonstrate the fundamentals of electromagnetic control devices.

General Outcomes: *The student will:*

- identify and state the function of electromagnetic control devices
- explain the operation of electromagnetically controlled systems
- design and construct electromagnetic circuits, using ladder logic systems and wiring diagrams
- demonstrate established laboratory procedures and safe work practices
- demonstrate basic competencies.

SCOPE AND SEQUENCE

INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME
<div>Fabrication Tools & Materials★ FAB1010</div>	<div>Structural Engineering FAB2010</div> <div>Print Reading FAB2020</div>	<div>Materials Testing◆ FAB3010</div> <div>Metallurgy Fundamentals◆ FAB3020</div>	Materials and Structures
<div>Oxyacetylene Welding FAB1040</div> <div>Basic Electric Welding◆ FAB1050</div> <div>Semi-automated/ Automated Welding FAB1048</div> <div>Bar & Tubular Fabrication◆ FAB1110</div> <div>Sheet Fabrication 1◆ (Hand Processes) FAB1090</div> <div>Fabrication Principles★◆ FAB1100</div>	<div>Oxyfuel Welding FAB2030</div> <div>Thermal Cutting FAB2040</div> <div>Arc Welding 1 FAB2050</div> <div>Arc Welding 2 FAB2060</div> <div>Gas Metal Arc Welding 1 FAB2070</div> <div>Flux Core Arc Welding 1 FAB2048</div> <div>Pipe Fitting◆ FAB2170</div> <div>Sheet Fabrication 2 (Machine Processes) FAB2090</div> <div>Sheet Fabrication 3 (Parallel Line) FAB2100</div> <div>Forging Fundamentals◆ FAB2110</div>	<div>Gas Tungsten Arc Welding FAB3030</div> <div>Specialized Welding◆ FAB3040</div> <div>Arc Welding 3 FAB3050</div> <div>Arc Welding 4 FAB3060</div> <div>Gas Metal Arc Welding 2 FAB3170</div> <div>Flux Core Arc Welding 2 FAB3048</div> <div>Pipe & Tubular Welding◆ FAB3070</div> <div>Automated Welding◆ FAB3080</div> <div>Sheet Fabrication 4 (Radial Line) FAB3090</div> <div>Sheet Fabrication 5 (Duct Components) FAB3110</div>	Fabrication Processes
<div>Foundry 1◆ (One-piece Pattern) FAB1120</div> <div>Principles of Machining◆ FAB1130</div> <div>Production Systems◆ FAB1160</div>	<div>Foundry 2 (Split Pattern) FAB2120</div> <div>Precision Turning 1 FAB2130</div> <div>Precision Milling 1 FAB2140</div> <div>CNC Turning (Computer Numerical Control) FAB2150</div> <div>Custom Fabrication◆ FAB2160</div>	<div>Foundry 3◆ (Core Molding) FAB3120</div> <div>Precision Turning 2 FAB3130</div> <div>Precision Milling 2 FAB3140</div> <div>CNC Milling◆ (Computer Numerical Control) FAB3150</div> <div>Prefabrication Principles FAB3160</div>	Production Systems and Processes

—— Prerequisite

----- Recommended sequence

★ Course provides a strong foundation for further learning in this strand.

◆ Refer to specific course for additional prerequisites.

COURSE FAB1160: PRODUCTION SYSTEMS

Level: Introductory

Theme: Production Systems and Processes

Prerequisite: FAB1010 Fabrication Tools & Materials

Description: Students investigate and compare the principles of production operation and the characteristics of a number of production systems.

General Outcomes: *The student will:*

- list and describe common methods of manufacturing durable products
- demonstrate basic production planning and management skills
- identify the present and future career opportunities related to the production of durable products
- demonstrate basic competencies.

COURSE FAB1048: SEMI-AUTOMATED/AUTOMATED WELDING

Level: Introductory

Theme: Fabrication Processes

Prerequisite: FAB1010 Fabrication Tools & Materials

Description: Students develop basic knowledge and skills related to the use of gas metal arc welding (GMAW) and flux core arc welding (FCAW) processes in both personal use and commercial applications. They also develop introductory knowledge of submerged arc welding (SAW) processes.

General Outcomes: *The student will:*

- identify health and safety hazards associated with GMAW, FCAW and SAW processes, and take preventative measures to avoid accidents and personal injury to self and others
- identify power sources used in GMAW, FCAW and SAW processes
- select appropriate electrode wires and shielding gases for use in GMAW and FCAW processes
- perform safe start-up and shut-down procedures for GMAW and/or FCAW processes
- demonstrate safe GMAW and/or FCAW processes on light gauge mild steel and/or mild steel plate in the flat and horizontal positions
- demonstrate basic competencies.

COURSE FAB2050: ARC WELDING 1

Level: Intermediate

Theme: Fabrication Processes

Prerequisite: FAB1050 Basic Electric Welding

Description: Students develop basic knowledge, skills and attitudes related to the operation and use of shielded metal arc welding (SMAW) equipment and accessories to make a variety of welds in the flat position.

General Outcomes: *The student will:*

- identify the appropriate treatment for minor injuries associated with welding processes
- describe the visual characteristics of a desirable weld
- demonstrate basic SMAW competencies in the flat position
- demonstrate basic competencies.

COURSE FAB2060: ARC WELDING 2

Level: Intermediate

Theme: Fabrication Processes

Prerequisite: FAB2050 Arc Welding 1

Description: Students identify appropriate electrodes, visually assessing a weld, and making the necessary adjustments to improve weld quality while developing horizontal position welding skills.

General Outcomes: *The student will:*

- explain the current systems used to classify electrodes in Canada and the United States
- identify strategies to assess and improve weld quality
- demonstrate basic shielded metal arc welding (SMAW) competencies in the horizontal position
- demonstrate basic competencies.

COURSE FAB2070: GAS METAL ARC WELDING 1

Level: Intermediate

Theme: Fabrication Processes

Prerequisite: FAB1048 Semi-automated/Automated Welding

Description: Students develop an understanding of the advantages and disadvantages of gas metal arc welding (GMAW) processes, and they gain experience using GMAW processes by performing flat, horizontal and vertical fillet welds and flat groove welds.

General Outcomes: *The student will:*

- outline the advantages and disadvantages of GMAW processes versus other forms of arc welding processes
- describe the characteristics of a desirable gas metal arc weld
- perform safe set-up and maintenance procedures with GMAW equipment
- demonstrate safe GMAW practices to perform:
 - fillet welds on mild steel plate in the flat, horizontal and vertical positions
 - groove welds on mild steel plate in the flat position
- demonstrate basic competencies.

COURSE FAB2090: SHEET FABRICATION 2 (MACHINE PROCESSES)

Level: Intermediate

Theme: Fabrication Processes

Prerequisite: FAB1090 Sheet Fabrication 1 (Hand Processes)

Description: Students use basic layout, cutting, bending and fastening operations to transform common types of sheet metals into consumer products.

General Outcomes: *The student will:*

- identify and describe common types of stock sheet metal materials and related tools
- demonstrate approved materials handling and storage practices
- perform basic sheet metal fabrication skills and practices to produce a product
- demonstrate basic competencies.

COURSE FAB2048: FLUX CORE ARC WELDING 1

Level: Intermediate

Theme: Fabrication Processes

Prerequisite: FAB1048 Semi-automated/Automated Welding

Description: Students develop an understanding of the advantages and disadvantages of flux core arc welding (FCAW) processes, and they gain experience using FCAW processes by performing flat, horizontal and vertical fillet welds and flat groove welds.

General Outcomes: *The student will:*

- outline the advantages and disadvantages of FCAW processes versus other forms of arc welding processes
- describe the characteristics of a desirable flux core arc weld
- perform safe set-up and maintenance procedures with FCAW equipment
- demonstrate safe FCAW practices and perform:
 - fillet welds on mild steel plate in the flat, horizontal and vertical positions
 - groove welds on mild steel plate in the flat position
- demonstrate basic competencies.

GENERAL OUTCOMES: ADVANCED LEVEL

COURSE FAB3010: MATERIALS TESTING

Level: Advanced

Theme: Materials and Structures

Prerequisite: FAB1010 Fabrication Tools & Materials

Description: Students are introduced to the principles of materials testing, and to the development and evaluation of a mechanical materials test.

General Outcomes: *The student will:*

- describe the purpose and nature of materials testing
- apply testing principles to construct or use a piece of materials testing apparatus
- test and compare the properties of common materials used in construction and fabrication
- demonstrate basic competencies.

COURSE FAB3020: METALLURGY FUNDAMENTALS

Level: Advanced

Theme: Materials and Structures

Prerequisite: FAB1010 Fabrication Tools & Materials

Description: Students develop fundamental understandings and skills related to metallurgy, and apply these skills to fabrication processes.

General Outcomes: *The student will:*

- identify and describe the fundamental principles of metallurgy and their industrial applications
- identify the basic alloy components and properties of common alloys
- apply metallurgical principles, skills and processes to heat treat a component or product
- demonstrate basic competencies.

COURSE FAB3030: GAS TUNGSTEN ARC WELDING

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2030 Oxyfuel Welding

Description: Students develop basic knowledge and skills related to the use of gas tungsten arc welding (GTAW) equipment and supplies to weld mild steel in the flat and horizontal positions.

General Outcomes: *The student will:*

- identify health and safety hazards associated with GTAW, and take preventive measures to avoid accidents and personal injury to self and others
- outline the advantages of GTAW over other forms of welding
- demonstrate basic GTAW competencies in the flat and horizontal positions
- demonstrate basic competencies.

COURSE FAB3040: SPECIALIZED WELDING

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2030 Oxyfuel Welding

Description: Students develop specific skills associated with advanced welding techniques to join and repair metals other than low carbon steel.

General Outcomes: *The student will:*

- list health and safety specific hazards associated with welding metals other than low carbon steels, and take preventive measures to avoid accidents and personal injury to self and others
- describe the unique welding characteristics of weldable metals other than low carbon steel
- select appropriate filler material and welding process to weld a metal other than low carbon steel
- demonstrate basic competencies.

COURSE FAB3050: ARC WELDING 3

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2060 Arc Welding 2

Description: Students learn the role of codes and standards in the welding trade, as well as test welds and develop vertical position welding skills.

General Outcomes: *The student will:*

- examine and maintain sheet metal arc welding (SMAW) equipment and accessories
- read and interpret weld drawings and symbols
- demonstrate advanced level SMAW competencies in the vertical position
- demonstrate basic competencies.

COURSE FAB3060: ARC WELDING 4

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB3050 Arc Welding 3

Description: Students apply and extend positional welding skills, by using a variety of common electrodes and thickness of materials.

General Outcomes: *The student will:*

- explain the effects heating and cooling have on a weld and weldment
- demonstrate advanced level sheet metal arc welding (SMAW) competencies in the flat, horizontal and vertical positions
- describe a career related to the welding field
- demonstrate basic competencies.

COURSE FAB3070: PIPE & TUBULAR WELDING

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB3170 Gas Metal Arc Welding 2

Description: Students develop specific skills related to pipe layout, preparation of pipe/tube joints and welding techniques.

General Outcomes: *The student will:*

- identify health and safety hazards associated with pipe and enclosed vessel welding, and take preventive measures to avoid accident and personal injury to self and others
- describe the advances made in pipe welding, and identify common types of joints and welding procedures
- demonstrate basic pipe/tube preparation and welding competencies
- demonstrate basic competencies.

COURSE FAB3080: AUTOMATED WELDING

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB3170 Gas Metal Arc Welding 2

Description: Students investigate and describe the operation of various manual, semi-automated and automated welding processes and systems used in fabrication industries.

General Outcomes: *The student will:*

- explain how manual, semi-automated and automated welding processes differ from one another
- identify employment and further training opportunities related to production welding
- apply knowledge of advanced welding processes to demonstrate/simulate an automated welding system
- demonstrate basic competencies.

COURSE FAB3090: SHEET FABRICATION 4 (RADIAL LINE)

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2100 Sheet Fabrication 3 (Parallel Line)

Description: Students develop specialized skills in cylindrical and conical pattern development and seam construction of ferrous and nonferrous sheet metals.

General Outcomes: *The student will:*

- describe the procedures that are used to lay out a typical cylindrical and conical shape
- demonstrate parallel and radial line pattern making skills
- perform advanced cylindrical and conical sheet stock fabrication skills and processes
- demonstrate basic competencies.

COURSE FAB3110: SHEET FABRICATION 5 (DUCT COMPONENTS)

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2100 Sheet Fabrication 3 (Parallel Line)

Description: Students apply and develop specialized skills in duct component pattern making and fabrication techniques.

General Outcomes: *The student will:*

- identify common duct components and applications
- demonstrate the principle of triangulation to create a transition pattern
- apply pattern making and sheet metal fabrication skills to create a duct component
- demonstrate basic competencies.

COURSE FAB3120: FOUNDRY 3 (CORE MOLDING)

Level: Advanced

Theme: Production Systems and Processes

Prerequisite: FAB1120 Foundry 1 (One-piece Pattern)

Description: Students investigate and apply advanced foundry processes to produce a hollow casting, using a sand and core mold.

General Outcomes: *The student will:*

- list and describe common core materials and production processes
- demonstrate advanced sand casting and coring skills and techniques
- create a profile of a trade or occupation within the foundry field
- demonstrate basic competencies.

COURSE FAB3130: PRECISION TURNING 2

Level: Advanced

Theme: Production Systems and Processes

Prerequisite: FAB2130 Precision Turning 1

Description: Students develop specialized lathe skills for thread cutting and taper turning techniques.

General Outcomes: *The student will:*

- demonstrate print reading and job sequencing competencies
- perform safe taper turning and thread cutting set-up procedures
- perform taper turning and thread cutting operations
- demonstrate basic competencies.

COURSE FAB3140: PRECISION MILLING 2

Level: Advanced

Theme: Production Systems and Processes

Prerequisite: FAB2140 Precision Milling 1

Description: Students develop specialized skills to use vertical and/or horizontal milling machines.

General Outcomes: *The student will:*

- demonstrate print reading and job sequencing competencies
- perform safe vertical and/or horizontal mill set-up procedures
- perform groove keyway and gear cutting operations
- demonstrate basic competencies.

COURSE FAB3150: CNC MILLING (COMPUTER NUMERICAL CONTROL)

Level: Advanced

Theme: Production Systems and Processes

Prerequisite: FAB1130 Principles of Machining

Description: Students develop skills in computer numerical control (CNC) programming to manufacture a three-dimensional product.

General Outcomes: *The student will:*

- demonstrate three-dimensional CNC programming skills
- apply CNC programming and operating skills to manufacture a milled part
- identify further training and employment opportunities related to CNC machining
- demonstrate basic competencies.

COURSE FAB3160: PREFABRICATION PRINCIPLES

Level: Advanced

Theme: Production Systems and Processes

Prerequisite: FAB2160 Custom Fabrication

Description: Students work in a cooperative learning environment to plan and construct a prefabricated product/structure to meet the specific needs of a client.

General Outcomes: *The student will:*

- perform basic shop drawing take-off skills
- demonstrate advanced level resource management skills
- demonstrate appropriate prefabrication skills and practices
- demonstrate basic competencies.

COURSE FAB3170: GAS METAL ARC WELDING 2

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2070 Gas Metal Arc Welding 1

Description: Students develop skills to evaluate and improve the quality of gas metal arc weldings, and they extend their gas metal arc welding (GMAW) skills by performing horizontal and vertical groove welds.

General Outcomes: *The student will:*

- identify variables that affect the quality of gas metal arc welds, and identify strategies to evaluate and improve weld quality
- perform safe set-up, maintenance and troubleshooting procedures with GMAW equipment
- demonstrate safe GMAW practices to perform groove welds on mild steel plate in the horizontal and vertical positions
- demonstrate basic competencies.

COURSE FAB3048: FLUX CORE ARC WELDING 2

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB2048 Flux Core Arc Welding 1

Description: Students develop skills to evaluate and improve the quality of flux core arc weldings, and they extend their flux core arc welding (FCAW) skills by performing horizontal and vertical groove welds.

General Outcomes: *The student will:*

- identify variables that affect the quality of flux core arc welds, and identify strategies to evaluate and improve weld quality
- perform safe set-up, maintenance and troubleshooting procedures with FCAW equipment
- demonstrate safe FCAW practices and perform groove welds on mild steel plate in the horizontal and vertical positions
- demonstrate basic competencies.

FINANCIAL MANAGEMENT

B. STRAND RATIONALE AND PHILOSOPHY

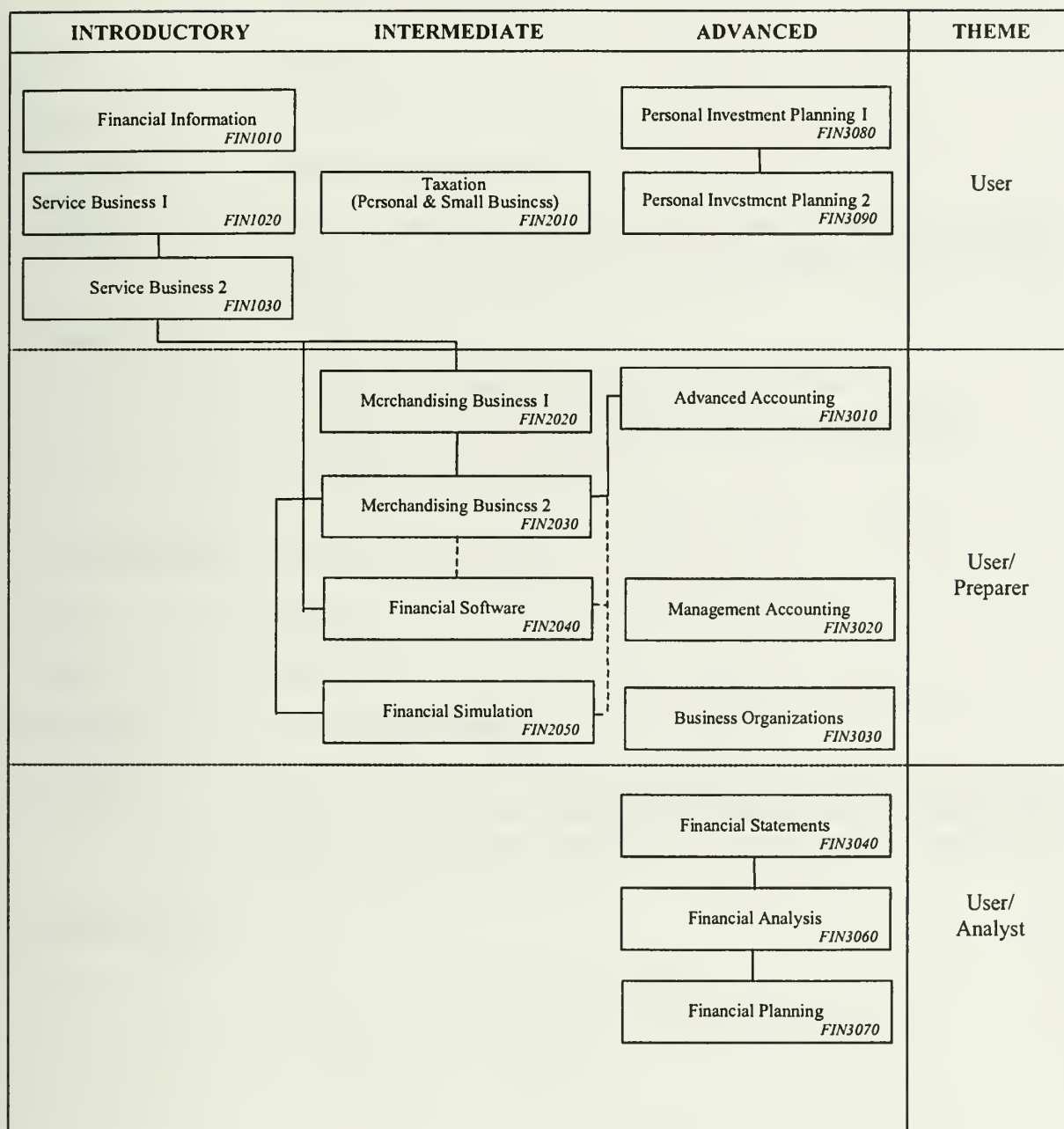
In our rapidly changing, complex world, the ability to manage our financial affairs is a basic requirement. Financial management is required in all aspects of society and is an essential life skill.

The Financial Management strand of Career and Technology Studies will provide an opportunity for students to learn about the development and use of financial information and to apply this information within the context of business and personal life. The field of financial management offers many occupational opportunities.

Within the philosophy of Career and Technology Studies, *students* in Financial Management *will*:

- develop an appreciation for ethics in personal and business financial management and investment
- develop an awareness of the impact of the economy on self, society and the workplace
- develop basic knowledge, skills and attitudes that have specific applications to financial management and broad career applications to the world of work
- develop an awareness of realistic career choices related to personal interests, abilities and aptitudes; and recognize the need for lifelong learning
- develop decision-making, problem-solving and communicative skills that demonstrate initiative, creativity and flexibility within a rapidly changing financial environment
- use information and technology effectively and efficiently
- link the knowledge, skills and attitudes developed in Financial Management to other curricular areas
- demonstrate the ability to work cooperatively with others
- use community and business partnerships to relate and apply theory to realistic situations
- demonstrate mastery of basic competencies.

SCOPE AND SEQUENCE



—— Prerequisite

----- Recommended sequence

COURSE FIN3060: FINANCIAL ANALYSIS

Level: Advanced

Theme: User/Analyst

Prerequisite: FIN3040 Financial Statements

Description: Students use formulas and ratios to evaluate the financial status of business organizations, interpret data, report results and recommend change based on the analysis.

General Outcomes: *The student will:*

- use appropriate data for reporting and decision making
- interpret data that has been obtained, in order to recommend action
- demonstrate basic competencies.

COURSE FIN3070: FINANCIAL PLANNING

Level: Advanced

Theme: User/Analyst

Prerequisite: FIN3060 Financial Analysis

Description: Students explain the value of financial planning for a business. They explore the impact of economic trends, changing world markets and tax implications, all of which must be considered when preparing financial forecasts. The concept of market research is also discussed.

General Outcomes: *The student will:*

- explain the value of financial planning
- design a forecast that incorporates internal and external factors
- demonstrate basic competencies.

COURSE FIN3080: PERSONAL INVESTMENT PLANNING 1

Level: Advanced

Theme: User

Prerequisite: None

Description: Students are introduced to the capital market and the available securities to choose from when building a personal investment portfolio. Students research and analyze a variety of securities, including equities, fixed income and mutual funds.

General Outcomes: *The student will:*

- demonstrate knowledge of investment terminology and concepts
- assess and compare three corporations competing within the same sector
- analyze, pick and track stocks and/or bonds to meet a specific goal and financial objective
- research and compare a variety of mutual funds
- demonstrate basic competencies.

COURSE FIN3090: PERSONAL INVESTMENT PLANNING 2

Level: Advanced

Theme: User

Prerequisite: FIN3080 Personal Investment Planning 1

Description: Students expand their knowledge of investing by analyzing the financial statements of a variety of companies, interviewing and critiquing an investment advisor, and creating investment portfolios using the steps of intelligent investing for short-term and long-term goals.

General Outcomes: *The student will:*

- calculate ratios and evaluate and compare the financial statements of two companies
- critique an investment advisor
- research and build an RSP investment portfolio using the steps of intelligent investing and taking into consideration:
 - age and lifestyle of investor
 - specific goals and financial objectives of investor
 - risk tolerance of investor
- research and build an investment portfolio for a short-term goal using the steps of intelligent investing and taking into consideration:
 - age and lifestyle of investor
 - specific goals and financial objectives of investor
 - risk tolerance of investor
- demonstrate basic competencies.

SCOPE AND SEQUENCE

INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME
	<div>Workstation Operations <i>INF2010</i></div> <div>Telecommunications 1 <i>INF2190</i></div>	<div>Hardware/Software Analysis <i>INF3010</i></div> <div>Local Area Networks <i>INF3020</i></div> <div>Telecommunications 2 ♦ <i>INF3180</i></div>	System Operations
<div>Keyboarding 1 <i>INF1020</i></div>	<div>Keyboarding 2 <i>INF2030</i></div> <div>Keyboarding 3 <i>INF2040</i></div>	<div>Keyboarding 4 <i>INF3030</i></div> <div>Keyboarding 5 <i>INF3040</i></div> <div>Keyboarding 6 <i>INF3050</i></div>	Text/Data Input
<div>Word Processing 1 <i>INF1030</i></div> <div>Graphics Tools <i>INF1040</i></div> <div>Database 1 <i>INF1050</i></div> <div>Spreadsheet 1 <i>INF1060</i></div> <div>Hypermedia Tools <i>INF1070</i></div>	<div>Word Processing 2 ♦ <i>INF2050</i></div> <div>Electronic Publishing 1 ♦ <i>INF2060</i></div> <div>Database 2 <i>INF2070</i></div> <div>Spreadsheet 2 <i>INF2080</i></div> <div>Multimedia Authoring 1 <i>INF2130</i></div>	<div>Word Processing 3 ♦ <i>INF3060</i></div> <div>Electronic Publishing 2 <i>INF3070</i></div> <div>Information Management Tools <i>INF3080</i></div> <div>Multimedia Authoring 2 <i>INF3130</i></div>	Productivity Software
	<div>Correspondence ♦ <i>INF2090</i></div> <div>Reports ♦ <i>INF2100</i></div> <div>Tables/Forms ♦ <i>INF2110</i></div> <div>Software Integration 1 ♦ <i>INF2120</i></div>	<div>Specialization 1 ♦ <i>INF3100</i></div> <div>Specialization 2 ♦ <i>INF3110</i></div> <div>Software Integration 2 <i>INF3120</i></div> <div>Software Integration 3 ♦ <i>INF3090</i></div>	Applied Processing
	<div>Information Highway 2 <i>INF2200</i></div> <div>Process Control ♦ <i>INF2140</i></div>	<div>Information Highway 3 <i>INF3190</i></div> <div>Internet Services <i>INF3200</i></div> <div>Expert Systems ♦ <i>INF3140</i></div>	Dynamic Environment

(continued)

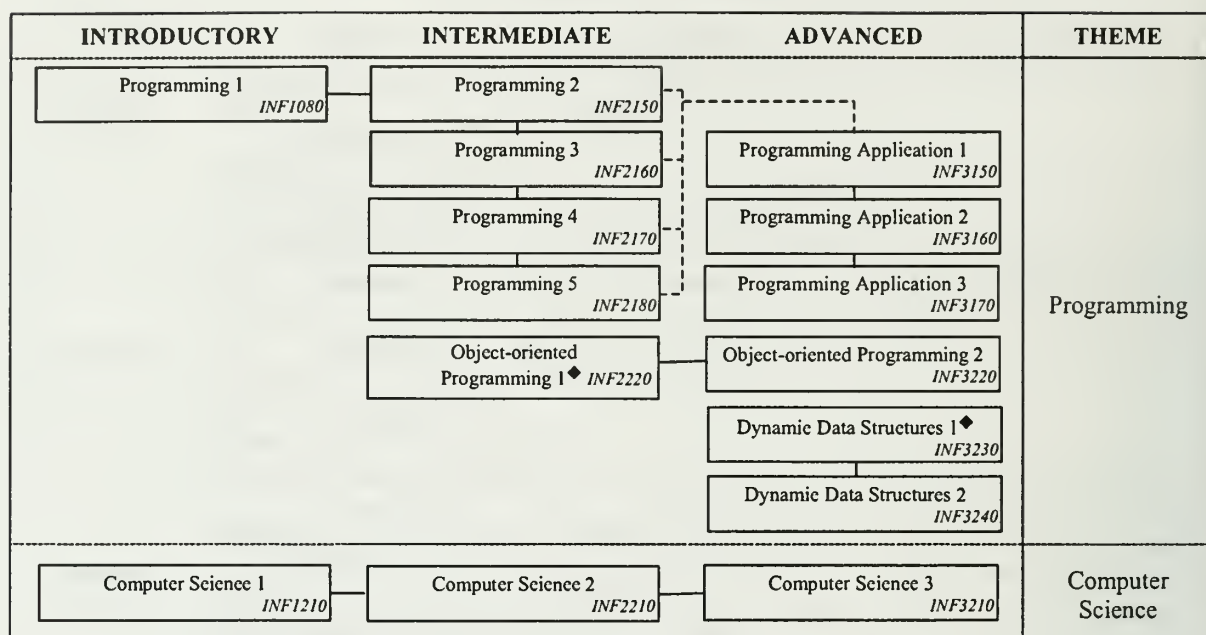
—— Prerequisite

----- Recommended sequence

♦ Refer to specific courses for additional prerequisites.

Note: Computer Operations and Information Highway 1 have been withdrawn effective September 2003.

SCOPE AND SEQUENCE (continued)



Prerequisite
 Recommended sequence

♦ Refer to specific courses for additional prerequisites.

GENERAL OUTCOMES: INTRODUCTORY LEVEL

COURSE INF1020: KEYBOARDING 1

Level: Introductory

Theme: Text/Data Input

Prerequisite: None

Description: Students develop accurate touch keystroking of text and data appropriate to personal use and the application of efficient workstation procedures.

General Outcomes: *The student will:*

- demonstrate keyboarding competence:
 - text entry at 20 words per minute (wpm)
 - numeric entry at 80 keystrokes per minute (kpm)
 - technique
- apply, consistently, appropriate workstation routines
- demonstrate basic competencies.

COURSE INF1030: WORD PROCESSING 1

Level: Introductory

Theme: Productivity Software

Prerequisite: None

Description: Students develop skill in using basic commands and functions in word processing software, including document editing, and the formatting and printing of reports, correspondence and tables suitable for personal use applications.

General Outcomes: *The student will:*

- demonstrate correct use of software functions, by producing mailable, properly formatted:
 - paginated reports with headings and references
 - letters with basic components
 - two-column tables with main headings and subheadings
- apply, consistently, appropriate workstation routines
- demonstrate basic competencies.

COURSE INF1040: GRAPHICS TOOLS

Level: Introductory

Theme: Productivity Software

Prerequisite: None

Description: Students learn the basic commands and functions of computer graphics software, including bitmapped graphics (paint program) and vector graphics (draw program). Students also develop basic skills in manipulating existing graphics, as well as in producing their own graphics.

General Outcomes: *The student will:*

- demonstrate the basic elements and principles of design, by using computer software graphics tools to:
 - duplicate graphics designs
 - create graphics layouts
- demonstrate use of software functions
- apply, consistently, appropriate workstation routines
- demonstrate basic competencies.

COURSE INF1210: COMPUTER SCIENCE 1

Level: Introductory

Theme: Computer Science

Prerequisite: None

Description: Students are introduced to the nature, approaches and areas of interest of computer science and its relationship to areas, such as computer engineering and information technology. Students explore concepts associated with hardware, software and processes at an introductory level. There is an emphasis on sequential and structured programming approaches.

General Outcomes: *The student will:*

- identify and describe the nature, approaches and areas of interest of computer science
- explain and demonstrate the nature, developmental process, use of basic algorithms associated with input processing output (IPO) and structured approaches, and application of these idioms to create complex algorithms
- explain and demonstrate the nature, evolution, types and role of programming languages
- explain and demonstrate the rationale, three fundamental control structures and representation of data in sequential and structured programs
- explain the nature, evolution and basic architecture of the von Neumann computer system
- demonstrate basic competencies.

